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Operations and Services

TSUNAMI WARNING SERVICES, NWSPD 10-7

TSUNAMI WARNING CENTER OPERATIONS

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SUMMARY OF REVISIONS: This supersedes NWS Instruction 10-701, dated May 19, 2003. Numerous changes were made to reflect new responsibilities and clarify tsunami warning services, following the December 26, 2004, tsunami in Indonesia.

1. Housing requirements for the West Coast and Alaska Tsunami Warning Center (WC/ATWC) were removed.
2. Operational responsibilities for the Atlantic Basin, U.S. and Canadian Atlantic Coasts, and the Gulf of Mexico were added to WC/ATWC. Tsunami bulletins for these areas are defined, including details such as breakpoints.
3. Operational responsibilities for the Indian Ocean and Caribbean were added to the Pacific Tsunami Warning Center, including the role of the Japan Meteorological Agency. Tsunami bulletins for these areas are defined.
4. Appendix A was added, containing product examples.
5. Appendix B was added, containing a glossary of terms.

/signed/
Dennis McCarthy
Director, Office of Climate,
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12/08/06

Date

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1. West Coast/Alaska Tsunami Warning Center (WC/ATWC).

1.1. General. The WC/ATWC, located at Palmer, Alaska, is responsible for the preparation and dissemination of tsunami warning, watch, advisory, and information products to the WC/ATWC Area of Responsibility (AOR). The WC/ATWC AOR is defined as the coastal regions of Canada and all U.S. States except Hawaii. The WC/ATWC has the primary responsibility for the detection and parameterization of potentially tsunamigenic earthquakes occurring within or immediately adjacent to its AOR and events within the Atlantic Basin north of the Tropic of Cancer.

1.2. Operations. The WC/ATWC will operate in accordance with the following procedures for earthquakes occurring:

1.2.1. Near the Pacific coasts of Alaska, British Columbia, Washington, Oregon, and California. For initially determined magnitudes greater than 7.0 but less than or equal to 7.5, the WC/ATWC will issue a Tsunami Warning which extends to the nearest breakpoint beyond 350 kilometers (km) from the epicenter. No watch will be issued. The warning will not normally be expanded.

For initially determined magnitudes greater than 7.5 but less than or equal to 7.8, the WC/ATWC will issue a Tsunami Warning which extends to the nearest breakpoint beyond 1000 km from the epicenter. No watch will be issued. The warning will not normally be expanded.

For initially determined magnitudes greater than 7.8, a Tsunami Warning will be issued for the area within a 3-hour wave travel time from the time of product issuance, and a Tsunami Watch will be issued extending an additional 3 hours of wave travel time. Subsequent bulletins will be issued half-hourly until the warning is canceled or a final warning supplement is issued. All watch and warning areas will be described using the breakpoints shown in Section 1.2.9. (See Appendix A for an example of a Pacific WC/ATWC Tsunami Watch/Warning/Advisory product: WEPA41.)

1.2.2. In the Bering Sea. For initially determined magnitudes greater than 7.0, a Tsunami Warning will be issued covering St. Paul and St. George Islands and the Aleutian Islands (Attu to False Pass). There will be no watch area, and the warning area will not normally be expanded. Subsequent bulletins will be issued half hourly until the warning is canceled or a final warning supplement is issued.

1.2.3. Elsewhere in the Pacific Basin and when the event has potential to generate a tsunami dangerous to the WC/ATWC Pacific AOR. For events with an initially determined magnitude greater than 7.5 and less than or equal to 7.8, the WC/ATWC, after coordinating with the Pacific Tsunami Warning Center (PTWC), will issue a Tsunami Warning for any of its AOR within 1000 km of the epicenter if the source region is known to produce tsunamis dangerous to the AOR. No watch will be issued and the warning will not normally be expanded. If no AOR region is within 1000 km or the source region is not known to produce tsunamis dangerous to the AOR, a Tsunami Advisory will be issued.

For events with an initially determined magnitude greater than 7.8 the WC/ATWC, after coordinating with the PTWC, will operate under the following guidelines:

- (a) When any part of the WC/ATWC Pacific AOR is within 6 hours tsunami travel time from the epicenter, except when the epicenter is along the coast of Mexico or Central America, a Tsunami Warning will be issued for the area within a 3-hour wave travel time from the time of product issuance, and a Tsunami Watch will be issued extending another 3 hours of travel time. All warning and watch areas will be described using the breakpoints in Section 1.2.9.
- (b) When the epicenter is more than 6 hours tsunami travel time distant from any part of the WC/ATWC Pacific AOR, or the event does not have the potential to generate a tsunami dangerous to the WC/ATWC's Pacific AOR, a Tsunami Advisory will be issued.
- (c) Subsequent bulletins will be issued half-hourly when a portion of the AOR is under a watch or warning; hourly otherwise.

1.2.4. Near the U.S. and Canadian Atlantic Coast. For initially determined magnitudes greater than 6.7 but less than or equal to 7.5, the WC/ATWC will issue a Tsunami Warning extending to the nearest breakpoint beyond 350 km from the epicenter. No watch will be issued. The warning will not normally be expanded.

For initially determined magnitudes greater than 7.5 but less than or equal to 7.8, the WC/ATWC will issue a Tsunami Warning extending to the nearest breakpoint beyond 1000 km from the epicenter. No watch will be issued. The warning will not normally be expanded.

For initially determined magnitudes greater than 7.8, a Tsunami Warning will be issued for the area within a 3-hour wave travel time from the time of product issuance, and a Tsunami Watch will be issued extending an additional 3 hours of wave travel time.

For events that occur within the Gulf of Saint Lawrence, a Tsunami Warning will be issued for the Gulf of Saint Lawrence coast. No watch will be issued, and the warning will not normally be expanded.

All watch and warning areas will be described using the breakpoints shown in section 1.2.9. Subsequent bulletins will be issued half hourly until the warning is canceled or a final warning supplement is issued. (See Appendix A for an example of an Atlantic WC/ATWC Tsunami Watch/Warning/Advisory product: WEXX20.)

1.2.5. The Gulf of Mexico. For initially determined magnitudes greater than 6.7, a Tsunami Warning will be issued for the Gulf of Mexico coast. No watch will be issued. The warning will not normally be expanded. Subsequent bulletins will be issued half hourly until the warning is canceled or a final warning supplement is issued. All watch and warning areas will be described using the breakpoints shown in Section 1.2.9.

1.2.6. Elsewhere in the Atlantic Basin and when the event has the potential to generate a tsunami dangerous to the WC/ATWC's Atlantic AOR. For events with an initially determined magnitude greater than 7.5 and less than or equal to 7.8, the WC/ATWC, after coordinating with the PTWC, will issue a Tsunami Warning for any of its AOR within 1000 km of the epicenter if the source region has the potential to produce tsunamis dangerous to the AOR. No watch will be issued, and the warning will not normally be expanded. If no AOR region is within 1000 km, or the source region is not expected to produce tsunamis dangerous to the AOR, a Tsunami Information Statement will be issued.

For events with an initially determined magnitude greater than 7.8 and when the event has generated a tsunami dangerous to the WC/ATWC's Atlantic AOR, the WC/ATWC, after coordinating with the PTWC, will issue a Tsunami Warning to threatened areas within its AOR using the breakpoints in section 1.2.9.

Subsequent bulletins will be issued half-hourly until the warning is cancelled or a final warning supplement is issued.

1.2.7. Tsunami Advisory Bulletin. The WC/ATWC will issue a Tsunami Advisory Bulletin for the appropriate AOR whenever the PTWC has issued a Tsunami Warning for regions outside the WC/ATWC AOR. The bulletin will state whether the advisory may be upgraded to a watch or warning, or if there is no danger to the AOR from this event.

1.2.8. Tsunami Information Statements. The WC/ATWC will issue a Tsunami Information Statement whenever an earthquake with a magnitude of 6.5 or greater, but below the watch/warning thresholds described in sections 1.2.1 and 1.2.2, occurs within its Pacific AOR. The WC/ATWC, after coordination with the PTWC, will issue a Tsunami Information Statement for its Pacific AOR whenever an earthquake with a magnitude greater than 6.5 occurs in the Pacific basin outside of the WC/ATWC AOR, for which no warning, watch, or advisory has been issued. (See Appendix A for examples of these products: WEPA43 and WEAK53.)

The WC/ATWC will issue a Tsunami Information Statement whenever an earthquake with a magnitude of 6.0 or greater, but below the watch/warning thresholds described in sections 1.2.4, 1.2.5, and 1.2.6, occurs within its Atlantic AOR. The WC/ATWC, after coordination with the PTWC, will issue a Tsunami Information Statement for the Atlantic AOR whenever an earthquake with a magnitude greater than 6.0 occurs in the Caribbean Sea region, or when an earthquake with a magnitude greater than or equal to 6.5 occurs elsewhere in the Atlantic basin. (See Appendix A for examples of these products: WEXX22 and WEXX32.)

For AOR coastal earthquakes with the potential to be felt but below the thresholds above, the WC/ATWC will issue Tsunami Seismic Informational Statements giving the likelihood of tsunami impact and preliminary details of the earthquake. These messages are issued to prevent unnecessary evacuations. (See Appendix A for examples of these products: SEAK71, SEUS71, and SEXX60.)

1.2.9. Breakpoints. When issuing Pacific tsunami watch/warnings, the following breakpoints will be used to define the extent of the watch or warning in the WC/ATWC Pacific AOR:

Attu, AK	Yakutat, AK	Cape Blanco, OR
Adak, AK	Sitka, AK	Oregon-California Border
Nikolski, AK	Langara Island, BC	Cape Mendocino, CA
Dutch Harbor, AK	Northern Tip Vancouver Isl, BC	Point Reyes, CA
Sand Point, AK	Cape Flattery, WA	Point Conception, CA
Kodiak, AK	Point Grenville, WA	California-Mexico Border
Seward, AK	Clatsop Split, OR	
Cordova, AK	Cascade Head, OR	

When issuing Atlantic tsunami watch/ warnings, the following breakpoints will be used to define the extent of the watch or warning in the WC/ATWC Atlantic AOR:

Brownsville, TX	Ocean Reef, FL	Watch Hill, RI
Baffin Bay, TX	Jupiter Inlet, FL	Merrimack River, MA
Port O'Connor, TX	Flagler Beach, FL	Stonington, ME
High Island, TX	Altamaha Sound, GA	US/Canada Border
Morgan City, LA	South Santee River, SC	Charlesville, NS
MS/AL Border	Surf City, NC	Chezzetcook, NS
Destin, FL	Duck, NC	Meat Cove, NS
Suwannee River, FL	Chesapeake Bay, Smith Pt., VA	Cape Ray, NL
Bonita Beach, FL	Cape Henlopen, DE	La Manche, NL
Flamingo, FL	Sandy Hook, NJ	Boat Harbour, NL
		Cape Chidley, NL

Whenever the boundary of a watch or warning lies between two breakpoints, the watch or warning will be extended to, and include, the next breakpoint.

1.2.10. Backup of the PTWC. In the event that the PTWC is disabled or otherwise unable to issue any of its critical products, the WC/ATWC will issue those products on its behalf using the PTWC product identifiers. The WC/ATWC will issue these products when notified by the PTWC that backup is necessary. The WC/ATWC will also issue PTWC products when a significant event has occurred, communications between the centers has ceased and a time limit for the source region has been exceeded in which no critical products were issued by the PTWC. Time limits will be determined by the TWCs based on source regions.

2. Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC).

2.1. General. The PTWC, located at Ewa Beach, Oahu, Hawaii, is responsible for the preparation and dissemination of tsunami warning, watch, advisory, and information products to the PTWC AOR. In the Pacific, the PTWC AOR is defined as Hawaii and all U.S interests and other countries outside the WC/ATWC AOR. In the Caribbean, the PTWC AOR is Puerto Rico, the U.S. Virgin Islands, and the wider Caribbean outside the WC/ATWC AOR on an interim basis. This is further explained in Section 2.2.3. In the Indian Ocean, the PTWC AOR currently includes all countries with coastlines in that ocean. This interim arrangement is described in Section 2.2.4.

International responsibilities are by agreement and in coordination with UNESCO Intergovernmental Oceanographic Commission (IOC) tsunami programs. The PTWC has the primary responsibility for the detection and parameterization of potentially tsunamigenic earthquakes that might affect their AOR, except for those earthquakes for which the WC/ATWC has the primary responsibility.

2.1.1. Housing. Because the PTWC must quickly react to earthquakes 24-hours a day, its duty personnel respond either from within the Center or from government quarters located within 500 feet of the Center. Two persons are always available to respond, and, following a transition period that is currently underway, one of these two will always be available from within the Center. Some PTWC personnel are required to live on the Center grounds in government quarters on a permanent basis, while others occupy quarters on a temporary basis only when they are on duty.

2.2. Operations. The PTWC will operate in accordance with the following procedures for earthquakes occurring:

2.2.1. Near Hawaii. The PTWC is the operational center for the State of Hawaii's regional tsunami warning system to cover tsunamis generated within the state. For any earthquake occurring in the vicinity of the Hawaiian Islands with a magnitude above about 4.0, the PTWC will issue a product. If the magnitude is less than 6.7, the PTWC will issue a Local Tsunami Information Statement to advise the earthquake does not have significant tsunamigenic potential. However, if tsunami waves or coastal flooding are subsequently detected near the epicenter, an Urgent Local Tsunami Warning Message will be issued for part or all of the Hawaiian Islands.

If the magnitude is greater than or equal to 6.7, the PTWC will issue an Urgent Local Tsunami Warning Message for part or all of the Hawaiian Islands based only on the seismic data. Procedures and criteria for local and regional tsunami warnings in Hawaii, and the areas they cover, are coordinated with and approved by Hawaii State Civil Defense. When a warning is issued, subsequent messages will be issued at least every half-hour until the warning is cancelled or a final warning supplement is issued. (See Appendix A for an example of this product: WEHW40.)

In addition to these regional products, the PTWC will also issue products to Hawaii in accordance with its Pacific procedures outlined in Section 2.2.2.

2.2.2. In the Pacific and when the event has potential to generate a tsunami dangerous for the PTWC Pacific AOR. The PTWC serves as the operational center for the United Nations Educational, Scientific and Cultural Organization (UNESCO) Intergovernmental Oceanographic Commission's (IOC) Pacific Tsunami Warning and Mitigation System (PTWS). It has the primary responsibility for the detection and evaluation of tsunamis which threaten U.S. and foreign coasts throughout the Pacific Basin outside the WC/ATWC Pacific AOR.

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For any earthquake in the Pacific with an initially determined magnitude greater than or equal to 6.5 but less than or equal to 7.5, the PTWC will issue a Tsunami Information Bulletin (TIB) to its Pacific AOR to advise no threat of a widespread destructive tsunami.

For larger earthquakes in the Pacific or adjacent regions that are deep inside the earth, are inland, or otherwise pose no tsunami threat to the Pacific, the PTWC will similarly issue a TIB.

For any other Pacific earthquake with an initially determined magnitude greater than 7.5 but less than or equal to 7.8, the PTWC will issue a Tsunami Warning covering coastlines within 1000 km of the epicenter. This fixed-area warning will continue, with supplements issued at least hourly, until data are received to warrant a cancellation, a final warning supplement, or an upgrade to a wider warning.

For any earthquake with an initially determined magnitude greater than 7.8, the PTWC will issue a Tsunami Warning for the area within a 3-hour tsunami wave travel time from the time of product issuance and a Tsunami Watch for the area within a 3- to 6-hour tsunami wave travel time. The areas covered by the warning and watch will be expanded at least hourly with subsequent bulletins until data are received to warrant a cancellation, a final warning supplement, or an upgrade to a Pacific-wide warning. (See Appendix A for an example of this product: WEPA40.)

Close coordination between the WC/ATWC and PTWC is of utmost importance to avoid conflicting bulletin information. Bulletins will be disseminated to the international participants as outlined in the Communications Plan for the PTWS (see Section 8.1).

2.2.3. Near Puerto Rico and the U.S. Virgin Islands. The PTWC is an operational component of the regional tsunami warning system under development for Puerto Rico and the U.S. Virgin Islands (PR/USVI). Under current protocols among the Puerto Rico Seismic Network, the Puerto Rico State Emergency Management Agency, the Virgin Islands Territorial Emergency Management Agency, and the NWS, the PTWC will issue a TIB for the PR/USVI region for any earthquake in the Caribbean region with a magnitude greater than or equal to 6.0 or any earthquake in the Atlantic with a magnitude greater than or equal to 6.5. Depending upon the earthquake location and magnitude, the TIB will recommend no action, a Tsunami Watch, or a Tsunami Warning.

According to the protocol, and in appropriate circumstances, this will trigger other actions such as the issuance of a Civil Emergency Message by the local NWS Forecast Office to notify the public. Due to ongoing enhancements of seismic and sea level instrumentation in the Caribbean region, increased recognition of the tsunami threat and ongoing efforts to improve tsunami preparedness following the December 26, 2004, Indian Ocean tsunami disaster, the protocols described in general here are subject to change.

2.2.4. The Indian Ocean. The PTWC and the Japan Meteorological Agency (JMA) provide interim tsunami warning services for the Indian Ocean while that region develops its own tsunami warning capabilities. This arrangement was agreed to shortly following the December 26, 2004, Indian Ocean tsunami disaster in meetings organized by the IOC.

For any earthquake in the Indian Ocean region above magnitude 6.5, the PTWC and JMA will each issue a product for all countries in the Indian Ocean. The PTWC and JMA will issue Tsunami Watches for the Indian Ocean when conditions warrant (see criteria below) but will not issue Tsunami Warnings in accordance with protocols agreed to by the UNESCO/IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System.

For an Indian Ocean earthquake with a magnitude greater than or equal to 6.5 but less than or equal to 7.0, the PTWC will issue a TIB advising only the very small threat of a destructive local tsunami. For larger earthquakes in the region located deep inside the earth, inland, or otherwise posing no tsunami threat, the PTWC will also issue a TIB.

For any other Indian Ocean earthquake with a magnitude above 7.0, the PTWC will issue a Tsunami Watch. For magnitudes between 7.1 and 7.5, inclusive, the watch will be limited to the region within 200 km of the epicenter. For magnitudes between 7.6 and 7.8, inclusive, the watch will be limited to the region within 1000 km of the earthquake. For magnitudes of 7.9 and greater, the watch will be for the entire Indian Ocean.

The PTWC and JMA are developing procedures to coordinate their bulletins in order to avoid conflicting information.

2.2.5. The Caribbean. The IOCARIBE, IOC Sub-Commission for the Caribbean and adjacent regions, has requested that the PTWC provide interim tsunami warning services to the wider Caribbean until the region can implement its own warning services. Procedures are currently under development.

2.2.6. The South China Sea. The International Coordination Group (ICG)/PTWS has requested that the PTWC provide interim tsunami warning services to the South China Sea region until tsunami warning services can be established by another organization such as JMA or the Asia Disaster Prevention Center. Procedures are currently under development.

2.2.7. Backup of the WC/ATWC. In the event that the WC/ATWC is disabled or otherwise unable to issue any of its critical products, the PTWC will issue those products on its behalf using the WC/ATWC product identifiers. The PTWC will issue these products when notified by the WC/ATWC that backup is necessary. The PTWC will also issue WC/ATWC products when a significant event has occurred, communications between the centers has ceased, and a time limit for the source region has been exceeded in which no critical products were issued by the WC/ATWC. Time limits will be determined by the TWCs based on source regions.

3. WC/ATWC and PTWC Coordination and Decision-Making. Given the ocean-wide impact of some tsunami events and that the two tsunami warning centers (Centers) may be responsible for different aspects of the same earthquake, timely coordination between the WC/ATWC and PTWC is essential for the overall effectiveness of tsunami services. Earthquake parameters will usually be refined through coordination between warning centers. The threshold for coordination will be magnitude 6.5 in the Pacific and Atlantic, and 6.0 in the Caribbean.

The WC/ATWC and PTWC are singularly responsible for the initial tsunami bulletin for earthquakes with epicenters located within their respective regional AORs. All subsequent bulletins issued by each Center will be fully coordinated, that is, issued immediately after coordination, contain a common evaluation, and reflect the actions being taken by the other Center.

Initial bulletins should be disseminated within 10 minutes after the earthquake origin where high density seismic data exists (i.e., Alaska, Hawaii, British Columbia, and the U.S. east and west coasts). Bulletins for earthquakes located in areas with sparse data coverage should be issued within five minutes of receipt of sufficient data necessary to characterize the earthquake.

The determination of the location and magnitude to be used in the bulletins is the responsibility of the Center with its AOR closest to where the epicenter is located. The decision as to whether to issue or cancel a watch/warning bulletin for its AOR is the responsibility of each Center.

3.1. Bulletin Content and Format. Appendix A provides examples of the products issued by each of the Centers. Hawaiian Public Tsunami Information Statements (WEHW52) will be implemented after the appropriate public announcements have been made (reference NWS Directive 10-1805 on public notification procedures). Public products are now issued by the centers and are designed to be more readable than the standard tabulated products. These new products (WEAK51, WEAK53, WEXX30, WEXX32) are provided in addition to the standard products (WEPA41, WEPA43, WEXX20, WEXX22).

3.2. Subsequent Bulletin Decision Making. Procedures for the issuance of initial bulletins are defined primarily by the location, depth, and magnitude of the earthquake. Decisions regarding subsequent bulletins to initiate, continue, upgrade, or cancel a watch or warning are based upon all available seismic and sea level data, any reliable tsunami observations, and the output of numerical tsunami forecast models. Each of these information sources is evaluated in the context of the historical tsunami data, knowledge of the general behavior of tsunamis, and the hazard they pose.

4. Seismic Information Exchange and Dissemination. The National Earthquake Information Center (NEIC), located in Golden, Colorado, has the responsibility for disseminating information on earthquakes occurring worldwide. The NWS tsunami program generally will not disseminate or directly answer inquiries for seismic information, except in response to tsunamigenic and potentially tsunamigenic earthquakes and in cases where informative messages are necessary to prevent unneeded evacuations (i.e., strongly felt coastal earthquakes).

Separate from the exchange of information between Centers and with the NEIC, the WC/ATWC and PTWC will adhere to the following policy on the dissemination of seismic information:

- a. For tsunamigenic or potentially tsunamigenic earthquakes, no restrictions exist on the exchange of seismic data with any observatory.

b. For non-tsunamigenic earthquakes with epicenters located outside the Center's regional area of responsibility, inquiries from the news media will be referred to the NEIC.

c. For non-tsunamigenic earthquakes with epicenters located within the Center's regional area of responsibility (usually magnitude 4.0 or greater or those with felt reports), information messages disseminated to the news media or civil/military emergency service authorities will also be transmitted to the NEIC duty geophysicists at the time of release.

d. For non-tsunamigenic earthquakes, all requests from foreign agencies for data will be referred to the NEIC.

5. **Earthquake Seismology.** The primary method of detecting and evaluating earthquakes is through a network of seismic stations. The WC/ATWC and PTWC receive seismic data from a network of stations operated by the NWS and by other domestic and foreign governments and cooperating agencies. Seismic data are transmitted to the warning centers through various telemetry channels. These data allow the WC/ATWC and PTWC to locate, size, and characterize an earthquake, and therefore, determine the earthquake's potential for tsunami generation.

6. **Sea Level Data.** Sea level stations in the Tsunami Warning System (TWS) are operated by the NWS and by a wide variety of domestic and foreign agencies. These stations detect tsunamis along coasts and in mid-ocean by recording the unusual changes in sea level that tsunamis produce. Data from some of the stations are telemetered continuously in real time to the Centers. Others send their data when requested or on their own initiative if a tsunami is detected. Some stations have their data relayed in near real-time via the network of geostationary meteorological satellites (GOES).

The National Ocean Service operates and maintains the Next Generation Water Level Measurement System which also transmits tide data over GOES.

The Ocean and Atmospheric Research's Pacific Marine Environmental Laboratory and the NWS's National Data Buoy Center operate and maintain the network of deep-ocean detection and reporting of tsunami (DART) gauges.

7. **Dissemination.** Dissemination agencies provide a vital link between the TWS and the public. Dissemination agencies have the responsibility for evaluating the tsunami information received from the warning centers, for educating the public as to the danger of tsunamis, and for developing procedures to avoid loss of life and property.

Within the U.S. and its territories, state civil defense and emergency management agencies and the NWS have joint responsibility for communicating Tsunami Watch, Warning, Advisory, and Information Bulletins/Statements to the public. Where feasible, NOAA Weather Radio All-Hazards and other NWS dissemination systems will be used to relay tsunami information. Regional headquarters will provide guidelines for such usage within their AOR.

Outside the U.S., countries are required to designate national contact agencies to receive bulletins. Usually these agencies also serve as the respective national dissemination agencies. This designation is facilitated by the tsunami programs of the IOC.

8. Communications Plans/Operations Manual.

8.1. Description. The PTWC Communications Plan (COMM PLAN) serves as the operations manual for participants of the PTWS. It provides a general overview of the nature of tsunamis and a brief history of the warning service. It lists the sea level and seismograph stations which transmit data to the PTWC, describes procedures for the issuance of bulletins, and gives examples of PTWC tsunami bulletin formats and content. It also provides a summary of the primary bulletin recipients and their contact information and methods. The plan is provided at: http://ioc3.unesco.org/itic/files/TWSP_Communications_Plan_2005_rev2.pdf.

A similar document has been prepared jointly by the PTWC, JMA, and the IOC for participants of the Indian Ocean Tsunami Warning and Mitigation System. This document is provided at: http://ioc3.unesco.org/indotsunami/documents/IOTWS_CommunicationPlan_15Jan06.pdf.

A Communications Plan for the Caribbean Tsunami Warning System is in preparation.

The corresponding document for the WC/ATWC is the WC/ATWC Operations Plan. It describes communications, procedures, products, primary recipients, communication networks, and other pertinent information for participants in the WC/ATWC AOR. The document is provided at: <http://wcatwc.arh.noaa.gov/opsmanual.pdf>.

8.2. Responsibility. NWS Pacific Regional Headquarters (PRH) is responsible for the preparation and dissemination of the PTWC COMM PLAN and coordinating its preparation and update with the PTWC. The WC/ATWC is responsible for updates to the WC/ATWC Operations Manual. The documents will be updated and distributed as needed.

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1. WC/ATWC Products.

1.1 Pacific AOR Tsunami Warning/Watch/Advisory (WEPA41).

WEPA41 PAAQ 172056
TSUWCA

BULLETIN
TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1156 AM AKST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEPA41 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE ALASKA
COASTAL AREAS FROM KODIAK ALASKA TO ATTU ALASKA...

...A TEST TSUNAMI WATCH IS IN EFFECT FOR THE WASHINGTON -
BRITISH COLUMBIA AND ALASKA COASTAL AREAS FROM CAPE
FLATTERY WASHINGTON TO KODIAK ALASKA...

...AT THIS TIME THIS MESSAGE IS ADVISORY ONLY FOR OTHER
AREAS OF CALIFORNIA - OREGON - AND WASHINGTON...

EVALUATION

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. THEREFORE PERSONS IN LOW
LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR
LOCAL EMERGENCY OFFICIALS. PERSONS ON THE BEACH SHOULD MOVE TO
HIGHER GROUND IF IN A WARNED AREA. TSUNAMIS MAY BE A SERIES OF
WAVES WHICH COULD BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 7.9
LOCATION - 51.4N 175.9E
65 MILES S OF BULDIR I. ALASKA
320 MILES W OF ADAK ALASKA
TIME - 1150 AST 02/17/2006
1250 PST 02/17/2006
2050 UTC 02/17/2006

PKZ176-175-172-170-171-155-150-132-136-138-137-AKZ191-185-
181-171-172156-
COASTAL AREAS BETWEEN AND INCLUDING KODIAK ALASKA TO ATTU
ALASKA

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE ALASKA
COASTAL AREAS FROM KODIAK ALASKA TO ATTU ALASKA...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

SHEMYA-AK	1226 AST FEB 17	SAND PT.-AK	1450 AST FEB 17
ADAK-AK	1259 AST FEB 17	COLD BAY-AK	1517 AST FEB 17
DUTCH HARBOR-AK	1409 AST FEB 17	KODIAK-AK	1538 AST FEB 17

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PKZ132-136-138-137-130-141-140-120-121-129-127-125-126-128-
052-051-053-022-012-043-013-011-021-032-031-042-034-033-
035-041-036-PZZ130-131-133-134-132-135-150-AKZ171-145-111-

NWSI 10-701, December 22, 2006

101-121-125-131-135-017-020-018-019-021-022-023-024-025-
026-028-029-027-WAZ001-002-005-006-007-008-009-010-011-013-
014-015-172156-
COASTAL AREAS FROM CAPE FLATTERY WASHINGTON TO KODIAK
ALASKA

...A TEST TSUNAMI WATCH IS IN EFFECT FOR THE WASHINGTON -
BRITISH COLUMBIA AND ALASKA COASTAL AREAS FROM CAPE
FLATTERY WASHINGTON TO KODIAK ALASKA...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

SEWARD-AK	1605	AST	FEB 17	HOMER-AK	1701	AST	FEB 17
YAKUTAT-AK	1617	AST	FEB 17	KETCHIKAN-AK	1738	AST	FEB 17
SITKA-AK	1619	AST	FEB 17	JUNEAU-AK	1740	AST	FEB 17
LANGARA-BC	1725	PST	FEB 17	TOFINO-BC	1852	PST	FEB 17
VALDEZ-AK	1627	AST	FEB 17	NEAH BAY-WA	1903	PST	FEB 17
CORDOVA-AK	1637	AST	FEB 17				

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PZZ153-156-110-250-210-255-350-353-356-450-455-550-530-535-
555-670-673-650-655-750-WAZ016-021-ORZ001-002-021-022-CAZ001-
002-005-007-006-075-074-009-034-035-039-040-087-041-042-
043-172156-
COASTAL AREAS FROM THE CALIFORNIA-MEXICO BORDER TO CAPE
FLATTERY WASHINGTON

...TSUNAMI ADVISORY STATEMENT...

NO - REPEAT NO - TSUNAMI WATCH OR WARNING IS IN EFFECT FOR
THE COASTAL AREAS FROM THE CALIFORNIA-MEXICO BORDER TO CAPE
FLATTERY WASHINGTON

FOR INFORMATION ONLY - ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

CHARLESTON-OR	1907	PST	FEB 17	SAN FRANCISCO-CA	1958	PST	FEB 17
CRESCENT CITY-CA	1914	PST	FEB 17	SAN PEDRO-CA	2021	PST	FEB 17
SEASIDE-OR	1915	PST	FEB 17	LA JOLLA-CA	2031	PST	FEB 17
ASTORIA-OR	1938	PST	FEB 17				

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TSUNAMI WARNINGS ARE ISSUED DUE TO THE IMMINENT THREAT OF TSUNAMI.
WARNINGS CAN BE BASED SOLELY ON SEISMIC INFORMATION... OR BASED
ON CONFIRMATION THAT A POTENTIALLY DESTRUCTIVE WAVE HAS OCCURRED.
COASTAL RESIDENTS IN THE WARNING AREA WHO ARE NEAR THE BEACH OR
IN LOW-LYING REGIONS SHOULD MOVE IMMEDIATELY INLAND TO HIGHER
GROUND.

TSUNAMI WATCHES ARE ISSUED AS AN ADVANCE ALERT TO AREAS THAT
COULD BE IMPACTED BY A TSUNAMI. THE WATCH WILL BE EITHER
CANCELLED OR UPGRADED TO A WARNING. POPULATIONS IN A WATCH AREA
SHOULD CLOSELY FOLLOW THE PROGRESS OF THIS EVENT.

THE PACIFIC TSUNAMI WARNING CENTER AT EWA BEACH HAWAII WILL
ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC
OUTSIDE THE STATES AND PROVINCES LISTED ABOVE.

MESSAGES WILL BE ISSUED HALF-HOURLY OR SOONER IF CONDITIONS
WARRANT. THE TSUNAMI WARNING AND WATCH WILL REMAIN IN EFFECT
UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION AND EXPECTED ARRIVAL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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1.2 Pacific AOR Tsunami Information Statement (WEPA43).

WEPA43 PAAQ 172101
TIBWCA

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
101 PM PST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEPA43 MESSAGE...

...THIS TSUNAMI INFORMATION STATEMENT IS FOR ALASKA - BRITISH
COLUMBIA - WASHINGTON - OREGON AND CALIFORNIA ONLY...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR THE STATES
AND PROVINCES LISTED ABOVE.

EVALUATION

BASED ON MAGNITUDE AND HISTORIC TSUNAMI INFORMATION THE EARTHQUAKE
WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO CALIFORNIA -
OREGON - WASHINGTON - BRITISH COLUMBIA OR ALASKA. SOME OF THESE
AREAS MAY EXPERIENCE SMALL SEA LEVEL CHANGES. IN COASTAL AREAS OF
INTENSE SHAKING LOCALLY GENERATED TSUNAMIS CAN BE TRIGGERED BY
UNDERWATER LANDSLIDES.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 6.9
LOCATION - 35.1N 145.4E
- OFF EAST COAST OF HONSHU JAPAN
TIME - 1150 AST 02/17/2006
1250 PST 02/17/2006
2050 UTC 02/17/2006

THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE MESSAGES
FOR HAWAII AND OTHER AREAS OF THE PACIFIC.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST AND ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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1.3 Alaska Tsunami Information Statement (SEAK71).

SEAK71 PAAQ 172105
EQIAKX

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1205 PM AKST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEAK71 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A LOCATION AND MAGNITUDE SUCH
THAT A TSUNAMI WILL NOT BE GENERATED. THIS WILL BE THE ONLY
WC/ATWC MESSAGE ISSUED FOR THIS EVENT.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 5.3
LOCATION - 59.7N 154.4W
 20 MILES SE OF ILIAMNA ALASKA
 185 MILES SW OF ANCHORAGE ALASKA
 47 MILES DEEP
TIME - 1150 AST 02/17/2006
 1250 PST 02/17/2006
 2050 UTC 02/17/2006

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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1.4 U.S. West Coast Tsunami Information Statement (SEUS71).

SEUS71 PAAQ 172107
EQIWOC

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
107 PM PST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEUS71 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A MAGNITUDE SUCH THAT A TSUNAMI
WILL NOT BE GENERATED. THIS WILL BE THE ONLY WC/ATWC MESSAGE
ISSUED FOR THIS EVENT.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 5.2
LOCATION - 41.9N 125.66W
 110 MILES NW OF EUREKA CALIFORNIA
 295 MILES SW OF PORTLAND OREGON
TIME - 1150 AST 02/17/2006
 1250 PST 02/17/2006
 2050 UTC 02/17/2006

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
\$\$

1.5 Atlantic AOR Tsunami Warning/Watch (WEXX20).

WEXX20 PAAQ 172109
TSUAT1

BULLETIN

TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
409 PM EST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX20 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE
FLORIDA - GEORGIA - SOUTH CAROLINA AND NORTH CAROLINA
COASTAL AREAS FROM FLAGLER BEACH FLORIDA TO DUCK NORTH CAROLINA...

...AT THIS TIME THIS MESSAGE IS ADVISORY ONLY FOR U.S. AND
CANADIAN ATLANTIC AND GULF OF MEXICO COASTAL REGIONS NOT
INCLUDED IN THE WARNED AREA...

EVALUATION

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. THEREFORE PERSONS IN LOW
LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR
LOCAL EMERGENCY OFFICIALS. PERSONS ON THE BEACH SHOULD MOVE TO
HIGHER GROUND IF IN A WARNED AREA. TSUNAMIS MAY BE A SERIES
OF WAVES WHICH COULD BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 7.2
LOCATION - 32.2N 78.9W
100 MILES S OF MYRTLE BEACH SOUTH CAROLINA
80 MILES SE OF CHARLESTON SOUTH CAROLINA
TIME - 1550 EST 02/17/2006
1450 CST 02/17/2006
2050 UTC 02/17/2006

AMZ450-452-454-330-350-352-354-250-252-254-256-130-135-150-152-
154-156-158-FLZ024-025-033-038-GAZ154-166-141-139-117-119-SCZ051-
048>050-046-034-NCZ100-101-097-098-095-104-103-094-080-081-045>
047-172209-
COASTAL AREAS BETWEEN AND INCLUDING FLAGLER BEACH FLORIDA
TO DUCK NORTH CAROLINA.

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE
FLORIDA - GEORGIA - SOUTH CAROLINA AND NORTH CAROLINA
COASTAL AREAS FROM FLAGLER BEACH FLORIDA TO DUCK NORTH CAROLINA...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

CHARLESTON-SC 1746 EST FEB 17 JACKSONVILLE B-FL 1835 EST FEB 17
CAPE HATTERAS-NC 1749 EST FEB 17 SAVANNAH-GA 1930 EST FEB 17
MYRTLE BCH-SC 1826 EST FEB 17

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GMZ130-150-155-235-230-250-255-330-335-350-355-455-450-555-550-
630-655-650-750-755-830-856-853-850-657-656-032-075-052>054-
AMZ630-650-651-550-555-ANZ630>633-650-652-654-656-658-530>534-
537-430-431-450>455-330-335-338-350-353-355-230>237-250-254-
255-150-050-081-TXZ251-256-257-242>247-236>238-213-214-215-216-
LAZ051>054-066>070-040-062-064-MSZ080>082-ALZ061>064-FLZ002-
004-006-008-012-014-015-027-018-028-034-039-042-048>051-055-
060-062-065-069-070-075-073-074-072-068-076-064-059-054-047-
147-141-NCZ030>032-015>017-102-VAZ082-089>091-093>096-098>100-

NWSI 10-701, December 22, 2006

084>086-074>078-MDZ021>025-014-018-017-011-007-012-015-019-008-
DEZALL-NJZ016-020>026-012-013-NYZ006-071>081-CTZ009>012-RIZ002-
005>007-MAZ019>024-016-007-NHZ014-MEZ022>028-029-030-172209-
COASTAL AREAS FROM BROWNSVILLE TEXAS TO FLAGLER BEACH
FLORIDA AND FROM CURRITUCK BEACH LIGHTHOUSE NORTH CAROLINA
TO CAPE CHIDLEY LABRADOR.

...TSUNAMI ADVISORY STATEMENT...

NO - REPEAT NO - TSUNAMI WATCH OR WARNING IS IN EFFECT FOR
THE COASTAL AREAS FROM BROWNSVILLE TEXAS TO FLAGLER BEACH
FLORIDA AND FROM DUCK NORTH CAROLINA
TO CAPE CHIDLEY LABRADOR.

FOR INFORMATION ONLY - ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

MELBOURNE-FL	1818	EST	FEB 17	GRAND MANAN-NB	2124	EST	FEB 17
MIAMI-FL	1820	EST	FEB 17	PORTLAND-ME	2131	EST	FEB 17
KEY WEST-FL	1920	EST	FEB 17	BOSTON-MA	2204	EST	FEB 17
MONTAUK-NY	1938	EST	FEB 17	PANAMA CITY-FL	2113	CST	FEB 17
VIRGINIA BCH-VA	1939	EST	FEB 17	CORPUS CHRISTI-TX	2202	CST	FEB 17
ATLANTIC CITY-NJ	1943	EST	FEB 17	BONAVISTA-NF	2315	EST	FEB 17
LOCKEPORT-NS	2001	EST	FEB 17	ST PETERSBURG-FL	2328	EST	FEB 17
NANTUCKET ISLE-MA	2002	EST	FEB 17	BILOXI-MS	2236	CST	FEB 17
NEW YORK CITY-NY	2040	EST	FEB 17	BATTLE HARBOUR-NL	2354	EST	FEB 17
SCATARIE IS-NS	2112	EST	FEB 17	GALVESTON-TX	2318	CST	FEB 17
ST LAWRENCE-NF	2121	EST	FEB 17				

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TSUNAMI WARNINGS ARE ISSUED DUE TO THE IMMINENT THREAT OF TSUNAMI.
WARNINGS CAN BE BASED SOLELY ON SEISMIC INFORMATION... OR BASED
ON CONFIRMATION THAT A POTENTIALLY DESTRUCTIVE WAVE HAS OCCURRED.
COASTAL RESIDENTS IN THE WARNING AREA WHO ARE NEAR THE BEACH OR
IN LOW-LYING REGIONS SHOULD MOVE IMMEDIATELY INLAND TO HIGHER
GROUND.

MESSAGES WILL BE ISSUED HALF-HOURLY OR SOONER IF CONDITIONS
WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT
UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION AND EXPECTED ARRIVAL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
\$\$

1.6 Atlantic AOR Tsunami Information Statement (WEXX22).

WEXX22 PAAQ 172113
TIBAT1

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
413 PM EST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX22 MESSAGE...

...THIS TSUNAMI INFORMATION STATEMENT IS FOR THE U.S. ATLANTIC
AND GULF OF MEXICO COASTS AND EASTERN CANADA...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR U.S. ATLANTIC
AND GULF OF MEXICO STATES AND THE EASTERN CANADIAN PROVINCES.

EVALUATION

BASED ON EARTHQUAKE AND HISTORICAL TSUNAMI INFORMATION THE
EARTHQUAKE WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO
THE U.S. ATLANTIC... EASTERN CANADIAN OR GULF OF MEXICO COASTS.
SOME OF THESE AREAS MAY EXPERIENCE SMALL SEA LEVEL CHANGES.

HOWEVER - EARTHQUAKES OF THIS SIZE SOMETIMES GENERATE
TSUNAMIS THAT CAN BE DESTRUCTIVE ALONG COASTS LOCATED IN THE
REGION OF THE EARTHQUAKE EPICENTER. AUTHORITIES IN THE REGION
SHOULD BE AWARE OF THIS POSSIBILITY AND TAKE APPROPRIATE ACTION.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 6.8
LOCATION - 36.1N 13.2W
- NORTH ATLANTIC OCEAN
TIME - 1550 EST 02/17/2006
1450 CST 02/17/2006
2050 UTC 02/17/2006

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST AND ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
\$\$

1.7 Atlantic Information Statement (SEXX60).

SEXX60 PAAQ 172116
EQIAT1

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
416 PM EST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEXX60 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A MAGNITUDE SUCH THAT A TSUNAMI
WILL NOT BE GENERATED. THIS WILL BE THE ONLY WC/ATWC MESSAGE
ISSUED FOR THIS EVENT.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 4.9
LOCATION - 39.5N 74.3W
15 MILES NE OF ATLANTIC CITY NEW JERSEY
55 MILES SE OF PHILADELPHIA PENNSYLVANIA
TIME - 1550 EST 02/17/2006
1450 CST 02/17/2006
2050 UTC 02/17/2006

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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1.8 Pacific AOR Public Tsunami Warning/Watch/Advisory (WEAK51).

WEAK51 PAAQ 172056
TSUAK1

BULLETIN

PUBLIC TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1156 AM AKST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEAK51 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE ALASKA
COASTAL AREAS FROM KODIAK ALASKA TO ATTU ALASKA...

...A TEST TSUNAMI WATCH IS IN EFFECT FOR THE WASHINGTON -
BRITISH COLUMBIA AND ALASKA COASTAL AREAS FROM CAPE
FLATTERY WASHINGTON TO KODIAK ALASKA...

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING
AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE
IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND
INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE
FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE
WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE
THE TSUNAMI ARRIVAL AND SHOULD EVACUATE IMMEDIATELY. HOMES AND
SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS.
DO NOT STAY IN THESE STRUCTURES.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR
INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES. THIS
TSUNAMI WARNING IS BASED SOLELY ON EARTHQUAKE INFORMATION - THE
TSUNAMI HAS NOT YET BEEN CONFIRMED.

A TSUNAMI WATCH MEANS... ALL COASTAL RESIDENTS IN THE WATCH AREA
SHOULD PREPARE FOR POSSIBLE EVACUATION. A TSUNAMI WATCH IS ISSUED
TO AREAS WHICH WILL NOT BE IMPACTED BY THE TSUNAMI FOR AT LEAST
THREE HOURS. WATCH AREAS WILL EITHER BE UPGRADED TO WARNING STATUS
OR CANCELED.

AT 1150 AM ALASKAN STANDARD TIME ON FEBRUARY 17 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 7.9 OCCURRED 65 MILES SOUTH OF
BULDIR I. ALASKA. THIS EARTHQUAKE MAY HAVE GENERATED A TSUNAMI.
IF A TSUNAMI HAS BEEN GENERATED THE WAVES WILL FIRST REACH
SHEMYA ALASKA AT 026 PM AST ON FEBRUARY 17. ESTIMATED TSUNAMI
ARRIVAL TIMES AND MAPS ALONG WITH SAFETY RULES AND OTHER INFORMATION
CAN BE FOUND ON THE WEB SITE WCATWC.ARH.NOAA.GOV.

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE
HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO
PREDICT. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE
PRECEDED BY A RECEDING WATER LEVEL. MARINERS IN WATER DEEPER
THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI. WAVE HEIGHTS
WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF
OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL. DO NOT RETURN TO EVACUATED AREAS UNTIL AN
ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES.

THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE MESSAGES
FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE CALIFORNIA -
OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA.

ADDITIONAL MESSAGES WILL BE ISSUED HALF-HOURLY OR SOONER IF

NWSI 10-701, December 22, 2006

CONDITIONS WARRANT. THE TSUNAMI WARNING AND WATCH WILL REMAIN
IN EFFECT UNTIL FURTHER NOTICE. FOR FURTHER INFORMATION STAY TUNED
TO NOAA WEATHER RADIO... YOUR LOCAL TV OR RADIO STATIONS... OR SEE
THE WEB SITE WCATWC.ARH.NOAA.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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1.9 Pacific AOR Public Tsunami Information Statement (WEAK53).

WEAK53 PAAQ 172101
TIBAK1

PUBLIC TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
101 PM PST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEAK53 MESSAGE...

...A STRONG EARTHQUAKE HAS OCCURRED BUT A TSUNAMI IS NOT
EXPECTED ALONG THE CALIFORNIA/ OREGON/ WASHINGTON/
BRITISH COLUMBIA OR ALASKA COASTS...

NO - REPEAT NO - TSUNAMI WARNING OR WATCH IS IN EFFECT FOR
THESE AREAS.

BASED ON THE EARTHQUAKE MAGNITUDE AND HISTORIC TSUNAMI
INFORMATION A DAMAGING TSUNAMI IS NOT EXPECTED ALONG
THE CALIFORNIA/ OREGON/ WASHINGTON/ BRITISH COLUMBIA AND ALASKA
COASTS. SOME OF THESE AREAS MAY EXPERIENCE NON-DAMAGING SEA
LEVEL CHANGES. AT COASTAL LOCATIONS WHICH HAVE EXPERIENCED
STRONG GROUND SHAKING LOCAL TSUNAMIS ARE POSSIBLE DUE
TO UNDERWATER LANDSLIDES.

AT 1250 PM PACIFIC STANDARD TIME ON FEBRUARY 17 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 6.9 OCCURRED
OFF THE EAST COAST OF HONSHU JAPAN.

THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE MESSAGES
FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE CALIFORNIA/
OREGON/ WASHINGTON/ BRITISH COLUMBIA AND ALASKA.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST AND ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. SEE THE WEB SITE WCATWC.ARH.NOAA.GOV
FOR BASIC TSUNAMI INFORMATION - SAFETY RULES AND TSUNAMI TRAVEL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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1.10 Atlantic AOR Public Tsunami Warning/Watch/Advisory (WEXX30).

WEXX30 PAAQ 172109
TSUATE

BULLETIN
PUBLIC TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
409 PM EST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX30 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE
FLORIDA - GEORGIA - SOUTH CAROLINA AND NORTH CAROLINA
COASTAL AREAS FROM FLAGLER BEACH FLORIDA TO DUCK NORTH CAROLINA...

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING
AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE
IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND
INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE
FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE
WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE
THE TSUNAMI ARRIVAL AND SHOULD EVACUATE IMMEDIATELY. HOMES AND
SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS.
DO NOT STAY IN THESE STRUCTURES.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR
INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES. THIS
TSUNAMI WARNING IS BASED SOLELY ON EARTHQUAKE INFORMATION - THE
TSUNAMI HAS NOT YET BEEN CONFIRMED.

AT 350 PM EASTERN STANDARD TIME ON FEBRUARY 17 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 7.2 OCCURRED 100 MILES SOUTH OF
MYRTLE BEACH SOUTH CAROLINA.
THIS EARTHQUAKE MAY HAVE GENERATED A TSUNAMI. IF A TSUNAMI
HAS BEEN GENERATED THE WAVES WILL FIRST REACH
SOUTH SANTEE RIVER SOUTH CAROLINA AT 537 PM EST ON FEBRUARY 17.
ESTIMATED TSUNAMI ARRIVAL TIMES AND MAPS ALONG WITH SAFETY RULES
AND OTHER INFORMATION CAN BE FOUND ON THE WEB SITE
WCATWC.ARH.NOAA.GOV.

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE
HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO
PREDICT. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE
PRECEDED BY A RECEDING WATER LEVEL. MARINERS IN WATER DEEPER
THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI. WAVE HEIGHTS
WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF
OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL. DO NOT RETURN TO EVACUATED AREAS UNTIL AN
ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES.

ADDITIONAL MESSAGES WILL BE ISSUED HALF-HOURLY OR SOONER IF
CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN
IN EFFECT UNTIL FURTHER NOTICE. FOR FURTHER INFORMATION STAY TUNED
TO NOAA WEATHER RADIO... YOUR LOCAL TV OR RADIO STATIONS... OR SEE
THE WEB SITE WCATWC.ARH.NOAA.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS MESSAGE.
\$\$

1.11 Atlantic AOR Public Tsunami Information Statement (WEXX32).

WEXX22 PAAQ 172113
TIBAT1

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
413 PM EST FRI FEB 17 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX32 MESSAGE...

...THIS TSUNAMI INFORMATION STATEMENT IS FOR THE U.S. ATLANTIC
AND GULF OF MEXICO COASTS AND EASTERN CANADA...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR U.S. ATLANTIC
AND GULF OF MEXICO STATES AND THE EASTERN CANADIAN PROVINCES.

EVALUATION

BASED ON EARTHQUAKE AND HISTORICAL TSUNAMI INFORMATION THE
EARTHQUAKE WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO
THE U.S. ATLANTIC... EASTERN CANADIAN OR GULF OF MEXICO COASTS.
SOME OF THESE AREAS MAY EXPERIENCE SMALL SEA LEVEL CHANGES.

HOWEVER - EARTHQUAKES OF THIS SIZE SOMETIMES GENERATE
TSUNAMIS THAT CAN BE DESTRUCTIVE ALONG COASTS LOCATED IN THE
REGION OF THE EARTHQUAKE EPICENTER. AUTHORITIES IN THE REGION
SHOULD BE AWARE OF THIS POSSIBILITY AND TAKE APPROPRIATE ACTION.

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 6.8
LOCATION - 36.1N 13.2W
- NORTH ATLANTIC OCEAN
TIME - 1550 EST 02/17/2006
1450 CST 02/17/2006
2050 UTC 02/17/2006

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST AND ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
\$\$

2. PTWC Products.

2.1 Tsunami Warning/Watch/Advisory for the Pacific (WEPA40).

WEPA40 PHEB 111938
 TSUPAC
 TSUNAMI BULLETIN NUMBER 001
 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
 ISSUED AT 1938Z 11 NOV 2005

THIS BULLETIN IS FOR ALL AREAS OF THE PACIFIC BASIN EXCEPT
 ALASKA - BRITISH COLUMBIA - WASHINGTON - OREGON - CALIFORNIA.

... A TSUNAMI WARNING AND WATCH ARE IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

CHILE / PERU

A TSUNAMI WATCH IS IN EFFECT FOR

COLOMBIA / ECUADOR

FOR ALL OTHER PACIFIC AREAS, THIS MESSAGE IS AN ADVISORY ONLY.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1921Z 11 NOV 2005
 COORDINATES - 30.2 SOUTH 73.3 WEST
 LOCATION - OFF COAST OF CENTRAL CHILE
 MAGNITUDE - 8.2

EVALUATION

IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS WARNING IS
 BASED ONLY ON THE EARTHQUAKE EVALUATION. AN EARTHQUAKE OF THIS
 SIZE HAS THE POTENTIAL TO GENERATE A DESTRUCTIVE TSUNAMI THAT CAN
 STRIKE COASTLINES NEAR THE EPICENTER WITHIN MINUTES AND MORE
 DISTANT COASTLINES WITHIN HOURS. AUTHORITIES SHOULD TAKE
 APPROPRIATE ACTION IN RESPONSE TO THIS POSSIBILITY. THIS CENTER
 WILL MONITOR SEA LEVEL DATA FROM GAUGES NEAR THE EARTHQUAKE TO
 DETERMINE IF A TSUNAMI WAS GENERATED AND ESTIMATE THE SEVERITY OF
 THE THREAT.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES
 MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME
 BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES	ARRIVAL TIME
-----		-----	-----
CHILE	COQUIMBO	29.9S 71.3W	1941Z 11 NOV
	VALPARAISO	33.0S 71.6W	1955Z 11 NOV
	CALDERA	27.1S 70.8W	1959Z 11 NOV
	ANTOFAGASTA	23.3S 70.4W	2022Z 11 NOV
	IQUIQUE	20.2S 70.1W	2049Z 11 NOV
	TALCAHUANO	36.7S 73.1W	2053Z 11 NOV
	ARICA	18.5S 70.3W	2106Z 11 NOV
	PUERTO MONTT	41.5S 73.0W	2357Z 11 NOV
	EASTER IS	27.1S 109.4W	0026Z 12 NOV

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	PUNTA ARENAS	53.2S	70.9W	0118Z	12 NOV
	PUERTO WILLIAMS	54.8S	68.2W	0309Z	12 NOV
PERU	LA PUNTA	12.1S	77.2W	2222Z	11 NOV
COLOMBIA	TUMACO	1.8N	78.9W	0030Z	12 NOV
	BAHIA SOLANO	6.3N	77.4W	0105Z	12 NOV
	BUENAVENTURA	3.8N	77.2W	0118Z	12 NOV
ECUADOR	BALTRA IS.	0.5S	90.3W	0050Z	12 NOV

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT.
THE TSUNAMI WARNING AND WATCH WILL REMAIN IN EFFECT UNTIL
FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE BULLETINS
FOR ALASKA - BRITISH COLUMBIA - WASHINGTON - OREGON - CALIFORNIA.

2.2 Tsunami Information Bulletin for the Pacific (WEPA42).

WEPA42 PHEB 121944
TIBPAC
TSUNAMI BULLETIN NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 1944Z 11 NOV 2005

THIS BULLETIN IS FOR ALL AREAS OF THE PACIFIC BASIN EXCEPT
ALASKA - BRITISH COLUMBIA - WASHINGTON - OREGON - CALIFORNIA.

... TSUNAMI INFORMATION BULLETIN ...

THIS MESSAGE IS FOR INFORMATION ONLY.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1921Z 11 NOV 2005
COORDINATES - 30.2 SOUTH 73.3 WEST
LOCATION - OFF COAST OF CENTRAL CHILE
MAGNITUDE - 6.7

EVALUATION

NO DESTRUCTIVE PACIFIC-WIDE TSUNAMI THREAT EXISTS BASED ON
HISTORICAL EARTHQUAKE AND TSUNAMI DATA.

HOWEVER - EARTHQUAKES OF THIS SIZE SOMETIMES GENERATE LOCAL
TSUNAMIS THAT CAN BE DESTRUCTIVE ALONG COASTS LOCATED WITHIN
A HUNDRED KILOMETERS OF THE EARTHQUAKE EPICENTER. AUTHORITIES
IN THE REGION OF THE EPICENTER SHOULD BE AWARE OF THIS
POSSIBILITY AND TAKE APPROPRIATE ACTION.

THIS WILL BE THE ONLY BULLETIN ISSUED FOR THIS EVENT UNLESS
ADDITIONAL INFORMATION BECOMES AVAILABLE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE BULLETINS
FOR ALASKA - BRITISH COLUMBIA - WASHINGTON - OREGON - CALIFORNIA.

2.3 Tsunami Warning/Watch/Advisory Message for Hawaii (WEHW40) – Pacific Event.

WEHW40 PHEB 180144
TSUHWX

HIZALL-180244-

BULLETIN - EAS ACTIVATION REQUESTED

TSUNAMI MESSAGE NUMBER 007
PACIFIC TSUNAMI WARNING CENTER
0344 PM HST 11 NOV 2005

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING

A TSUNAMI WARNING IS ISSUED FOR THE STATE OF HAWAII EFFECTIVE AT 0344 PM HST.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0921 AM HST 11 NOV 2005
COORDINATES - 30.2 SOUTH 73.3 WEST
LOCATION - OFF COAST OF CENTRAL CHILE
MAGNITUDE - 8.2 MOMENT
MAGNITUDE - 8.1 RICHTER

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

GAUGE LOCATION	LAT	LON	TIME	AMPL	PER
OWENGA CHATHAM	44.0S	176.4W	1821Z	0.42M	34MIN
KAHULUI MAUI	20.9N	156.5W	1836Z	0.16M	46MIN
HILO HAWAII	19.7N	155.1W	1752Z	0.14M	36MIN
NUKU HIVA MARQUESAS	8.9S	140.1W	1822Z	0.56M	34MIN
BALTRA GALAPAGOS	0.4S	90.3W	1517Z	0.61M	34MIN
EASTER	27.2S	109.4W	1818Z	0.28M	16MIN
IQUIQUE	20.2S	70.2W	2006Z	0.49M	32MIN

TIME - TIME OF THE MEASUREMENT
AMPL - AMPLITUDE IN METERS FROM MIDDLE TO CREST OR MIDDLE TO TROUGH OR HALF OF THE CREST TO TROUGH
PER - PERIOD OF TIME FROM ONE WAVE CREST TO THE NEXT

EVALUATION

A TSUNAMI HAS BEEN GENERATED THAT COULD CAUSE DAMAGE ALONG COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

A TSUNAMI IS A SERIES OF LONG OCEAN WAVES. EACH INDIVIDUAL WAVE CREST CAN LAST 5 TO 15 MINUTES OR MORE AND EXTENSIVELY FLOOD COASTAL AREAS. THE DANGER CAN CONTINUE FOR MANY HOURS AFTER THE INITIAL WAVE AS SUBSEQUENT WAVES ARRIVE. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVES EFFICIENTLY WRAP AROUND ISLANDS. ALL SHORES ARE AT RISK NO MATTER WHICH DIRECTION THEY FACE. THE TROUGH OF A TSUNAMI WAVE MAY TEMPORARILY EXPOSE THE SEAFLOOR BUT THE AREA WILL

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QUICKLY FLOOD AGAIN. EXTREMELY STRONG AND UNUSUAL NEARSHORE
CURRENTS CAN ACCOMPANY A TSUNAMI. DEBRIS PICKED UP AND CARRIED
BY A TSUNAMI AMPLIFIES ITS DESTRUCTIVE POWER. SIMULTANEOUS HIGH
TIDES OR HIGH SURF CAN SIGNIFICANTLY INCREASE THE TSUNAMI HAZARD.

THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE IS

1113 PM HST 11 NOV 2005

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

2.4 Tsunami Information Statement for Hawaii (WEHW42) – Pacific Event.

WEHW42 PHEB 121947
TIBHWX

HIZALL-122047-

TSUNAMI INFORMATION STATEMENT NUMBER 001
PACIFIC TSUNAMI WARNING CENTER
0947 AM HST 11 NOV 2005

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI INFORMATION

THIS STATEMENT IS FOR INFORMATION ONLY. NO ACTION REQUIRED.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0921 AM HST 11 NOV 2005
COORDINATES - 30.2 SOUTH 73.3 WEST
LOCATION - OFF COAST OF CENTRAL CHILE
MAGNITUDE - 6.7 MOMENT

EVALUATION

BASED ON ALL AVAILABLE DATA A DESTRUCTIVE PACIFIC-WIDE TSUNAMI IS NOT EXPECTED AND THERE IS NO TSUNAMI THREAT TO HAWAII. REPEAT. A DESTRUCTIVE PACIFIC-WIDE TSUNAMI IS NOT EXPECTED AND THERE IS NO TSUNAMI THREAT TO HAWAII.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT UNLESS ADDITIONAL DATA ARE RECEIVED.

2.5 Urgent Local Tsunami Warning Message for Hawaii (WEHW40) – Hawaii Event.

WEHW40 PHEB 122155
TSUHWX

HIZALL-122255-

BULLETIN - EAS ACTIVATION REQUESTED

TSUNAMI MESSAGE NUMBER 001
PACIFIC TSUNAMI WARNING CENTER
1155 AM HST 12 NOV 2005

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - URGENT LOCAL TSUNAMI WARNING

EFFECTIVE IMMEDIATELY AN URGENT TSUNAMI WARNING IS ISSUED FOR

HAWAII AND MAUI COUNTIES

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1036 AM HST 12 NOV 2005
COORDINATES - 19.3 NORTH 155.1 WEST
LOCATION - 9 MILES WSW OF KALAPANA HAWAII
MAGNITUDE - 6.9

EVALUATION

A DESTRUCTIVE TSUNAMI MAY HAVE BEEN GENERATED BY THIS EARTHQUAKE.
RECOMMEND URGENT ACTION BE TAKEN TO PROTECT LIVES AND PROPERTY.

ADDITIONAL MESSAGES WILL BE ISSUED AS MORE INFORMATION
BECOMES AVAILABLE.

2.6 Public Tsunami Warning Message for Hawaii (WEHW50).

WEHW50 PHEB 012158
TSUHW1

PUBLIC TSUNAMI BULLETIN NUMBER 003
NWS PACIFIC TSUNAMI WARNING CENTER
1158 AM AST 03 OCT 2005

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEHW50 MESSAGE...

SUBJECT - URGENT LOCAL TSUNAMI WARNING CANCELLATION

THIS IS A BULLETIN FROM THE NWS PACIFIC TSUNAMI WARNING CENTER.
THE URGENT TSUNAMI WARNING ISSUED FOR ALL ISLANDS IN THE STATE
OF HAWAII IS NOW CANCELLED. DESTRUCTIVE TSUNAMI WAVES WERE
GENERATED BY AN EARTHQUAKE THAT OCCURRED IN THE SOUTH KONA
VICINITY OF THE BIG ISLAND AT 1140AM HAWAIIAN STANDARD TIME.
THESE WAVES HAVE NOW PASSED OR SUBSIDED IN MOST AREAS AND AS
A CONSEQUENCE THE URGENT TSUNAMI WARNING ISSUED FOR ALL ISLANDS
IN THE STATE OF HAWAII IS NOW CANCELLED.

THIS TSUNAMI WARNING CANCELLATION DOES NOT MEAN IT IS SAFE TO
RESUME NORMAL ACTIVITIES OR REOCCUPY EVACUATED COASTAL AREAS.
WAIT FOR THE ALL CLEAR RADIO ANNOUNCEMENT FROM CIVIL DEFENSE
BEFORE RETURNING TO THE COASTLINES. REPEAT. WAIT FOR THE ALL
CLEAR RADIO ANNOUNCEMENT FROM CIVIL DEFENSE BEFORE RETURNING
TO THE COASTLINES.

2.7 Tsunami Information Statement for Hawaii (SEHW70) – Hawaii Event.

SEHW70 PHEB 122134
EQIHWX

HIZALL-122234-

TSUNAMI INFORMATION STATEMENT NUMBER 001
PACIFIC TSUNAMI WARNING CENTER
1134 AM HST 12 NOV 2005

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - LOCAL TSUNAMI INFORMATION BULLETIN

THIS STATEMENT IS FOR INFORMATION ONLY. NO ACTION REQUIRED.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 1036 AM HST 12 NOV 2005
COORDINATES - 19.3 NORTH 155.1 WEST
LOCATION - 9 MILES WSW OF KALAPANA HAWAII
MAGNITUDE - 4.5

EVALUATION

NO TSUNAMI IS EXPECTED. REPEAT. NO TSUNAMI IS EXPECTED.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT UNLESS
ADDITIONAL DATA ARE RECEIVED.

2.8 Tsunami Watch for the Indian Ocean (WEIO21).

WEIO21 PHEB 122205
TSUIOX
TSUNAMI BULLETIN NUMBER 005
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 2205Z 12 NOV 2005

THIS BULLETIN IS FOR ALL AREAS OF THE INDIAN OCEAN.

... A REGIONAL TSUNAMI WATCH IS IN EFFECT ...

A TSUNAMI WATCH IS IN EFFECT FOR

INDIA / MYANMAR / INDONESIA / SRI LANKA / THAILAND /
BANGLADESH / MALAYSIA

FOR OTHER AREAS OF THE INDIAN OCEAN REGION, THIS MESSAGE IS AN
ADVISORY ONLY.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 2036Z 12 NOV 2005
COORDINATES - 12.3 NORTH 92.5 EAST
LOCATION - ANDAMAN ISLANDS INDIA
MAGNITUDE - 6.9

EVALUATION

EARTHQUAKES OF THIS SIZE HAVE THE POTENTIAL TO GENERATE A
DESTRUCTIVE LOCAL TSUNAMI AND SOMETIMES A DESTRUCTIVE REGIONAL
TSUNAMI ALONG COASTS LOCATED USUALLY NO MORE THAN A THOUSAND
KILOMETERS FROM THE EARTHQUAKE EPICENTER. AREAS FURTHER FROM THE
EPICENTER COULD EXPERIENCE SMALL SEA LEVEL CHANGES AND STRONG OR
UNUSUAL COASTAL CURRENTS.

HOWEVER - IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS
WATCH IS BASED ONLY ON THE EARTHQUAKE EVALUATION. AUTHORITIES IN
THE REGION SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS
POSSIBILITY. THE WATCH WILL NOT EXPAND TO OTHER AREAS OF THE
INDIAN OCEAN UNLESS ADDITIONAL DATA ARE RECEIVED TO WARRANT SUCH
AN EXPANSION.

DUE TO ONLY LIMITED SEA LEVEL DATA FROM THE REGION IT IS NOT
POSSIBLE FOR THIS CENTER TO RAPIDLY NOR ACCURATELY EVALUATE THE
THE STRENGTH OF A TSUNAMI IF ONE HAS BEEN GENERATED.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES. ACTUAL ARRIVAL TIMES
MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. THE TIME
BETWEEN SUCCESSIVE TSUNAMI WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION		COORDINATES	ARRIVAL TIME
INDIA	NORTH ANDAMAN	13.3N 92.6E	2104Z 12 NOV
	PORT BLAIR	11.9N 92.7E	2105Z 12 NOV
	LITTLE ANDAMAN	10.7N 92.3E	2120Z 12 NOV
	GREAT NICOBAR	7.1N 93.6E	2204Z 12 NOV
	CHENNAI	13.4N 80.4E	2249Z 12 NOV
	KAKINADA	17.2N 82.7E	2253Z 12 NOV

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	BALESHWAR	21.6N	87.3E	2338Z	12	NOV
MYANMAR	PYINKAYAING	16.0N	94.0E	2144Z	12	NOV
	CHEDUBA ISLAND	18.9N	93.4E	2223Z	12	NOV
	SITTWE	20.0N	92.9E	2250Z	12	NOV
	MERGUI	12.8N	98.4E	2345Z	12	NOV
	YANGON	16.0N	96.5E	2346Z	12	NOV
INDONESIA	BANDA ACEH	5.5N	95.1E	2232Z	12	NOV
	SIMEULUE	2.5N	96.0E	2256Z	12	NOV
	BELAWAN	3.8N	98.8E	0132Z	13	NOV
SRI LANKA	TRINCOMALEE	8.7N	81.3E	2242Z	12	NOV
	DONDRA HEAD	6.0N	81.0E	2259Z	12	NOV
	JAFFNA	9.9N	80.0E	2345Z	12	NOV
THAILAND	PHUKET	8.0N	98.2E	2309Z	12	NOV
	KO PHRA THONG	9.1N	98.2E	2318Z	12	NOV
	KO TARUTAO	6.6N	99.6E	0044Z	13	NOV
BANGLADESH	CHITTAGONG	22.7N	91.2E	0040Z	13	NOV
MALAYSIA	GEORGETOWN	5.4N	100.1E	0129Z	13	NOV
	PORT DICKSON	2.5N	101.7E	0513Z	13	NOV

THE JAPAN METEOROLOGICAL AGENCY MAY ISSUE ADDITIONAL INFORMATION FOR THIS EVENT.

2.9 Tsunami Information Bulletin for the Indian Ocean (WEIO23).

WEIO23 PHEB 122202
TIBIOX
TSUNAMI BULLETIN NUMBER 004
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 2202Z 12 NOV 2005

THIS BULLETIN IS FOR ALL AREAS OF THE INDIAN OCEAN.

... TSUNAMI INFORMATION BULLETIN ...

THIS MESSAGE IS FOR INFORMATION ONLY.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 2036Z 12 NOV 2005
COORDINATES - 12.3 NORTH 92.5 EAST
LOCATION - ANDAMAN ISLANDS INDIA
MAGNITUDE - 6.9

EVALUATION

A DESTRUCTIVE WIDESPREAD TSUNAMI THREAT DOES NOT EXIST BASED ON HISTORICAL EARTHQUAKE AND TSUNAMI DATA.

HOWEVER - THERE IS A VERY SMALL POSSIBILITY OF A LOCAL TSUNAMI THAT COULD AFFECT COASTS LOCATED USUALLY NO MORE THAN A HUNDRED KILOMETERS FROM THE EARTHQUAKE EPICENTER. AUTHORITIES IN THE REGION NEAR THE EPICENTER SHOULD BE MADE AWARE OF THIS POSSIBILITY.

THE JAPAN METEOROLOGICAL AGENCY MAY ISSUE ADDITIONAL INFORMATION FOR THIS EVENT.

2.10 Tsunami Information Bulletin for Puerto Rico and the U.S. Virgin Islands with a Warning Recommended (WECA42).

WECA42 PHEB 122212
TIBCAK
TSUNAMI BULLETIN NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 2212Z 12 NOV 2005

THIS BULLETIN IS FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS.

... TSUNAMI INFORMATION BULLETIN ...

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 2036Z 12 NOV 2005
COORDINATES - 19.8 NORTH 65.5 WEST
LOCATION - PUERTO RICO REGION
MAGNITUDE - 6.9

EVALUATION

EARTHQUAKES OF THIS SIZE MAY GENERATE A DESTRUCTIVE TSUNAMI.

BASED ON PREAPPROVED PROTOCOLS... A TSUNAMI WARNING FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS IS RECOMMENDED.

THIS WILL BE THE ONLY BULLETIN ISSUED FOR THIS EVENT UNLESS ADDITIONAL INFORMATION BECOMES AVAILABLE.

2.11 Tsunami Information Bulletin for Puerto Rico and the U.S. Virgin Islands with No Action Required (WECA42).

WECA42 PHEB 122209
TIBCA
TSUNAMI BULLETIN NUMBER 001
PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS
ISSUED AT 2209Z 12 NOV 2005

THIS BULLETIN IS FOR PUERTO RICO AND THE U.S. VIRGIN ISLANDS.

... TSUNAMI INFORMATION BULLETIN ...

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 2036Z 12 NOV 2005
COORDINATES - 19.8 NORTH 65.5 WEST
LOCATION - PUERTO RICO REGION
MAGNITUDE - 6.1

EVALUATION

THIS EARTHQUAKE IS TOO SMALL TO CAUSE A SIGNIFICANT TSUNAMI.
CONSEQUENTLY THERE IS NO TSUNAMI THREAT TO PUERTO RICO OR THE
U.S. VIRGIN ISLANDS.

UNLESS ADDITIONAL DATA ARE RECEIVED... AND BASED ON PREAPPROVED
PROTOCOLS... NO ACTION IS REQUIRED.

THIS WILL BE THE ONLY BULLETIN ISSUED FOR THIS EVENT UNLESS
ADDITIONAL INFORMATION BECOMES AVAILABLE.

3. TWC Graphical Internet-Based Products.

The following are official NWS web-based graphic products which may be produced by the tsunami warning centers (see websites listed in Section 4):

Product

Epicentral zone maps with appropriate geophysical overlays
Tsunami Travel Time map
Warning/Watch area map

4. TWC Text Internet-based Products.

The following are official NWS internet-based products which may be produced by the tsunami warning centers:

Product

Web-based tsunami arrival time list
Digital cell phone message
XML-CAP format message
Tsunami bulletins formatted for web viewing
RSS feeds for tsunami bulletins

These products can be found at both Tsunami Warning Centers homepage:

<http://wcatwc.arh.noaa.gov/>

<http://www.prh.noaa.gov/pr/ptwc/>

APPENDIX B - Glossary of Terms

Area of Responsibility (AOR). The geographical area within which a Center has the responsibility for the dissemination of Tsunami Warnings, Watches, Advisories, and Information Bulletins/Statements and the provision of interpretive information to emergency managers and other officials, news media, and the public.

Earthquake Magnitude. A logarithmic scale for indicating the size of earthquakes. For tsunami warning purposes the moment magnitude scale (based on seismic P waves, surface waves, or both) will be used to size potentially tsunamigenic earthquakes. Other magnitude scales such as Ms, mb, and ml can be used as appropriate to size smaller non-tsunamigenic earthquakes and as a supplement to the moment magnitude scale for larger earthquakes.

Final Warning Supplement. A final text product issued following a damaging or potentially damaging tsunami within a Center's AOR that may pose a continuing threat. The supplement provides guidance to local officials regarding when they can consider the threat to have ceased. The cancellation or all clear decision must be made by local emergency officials.

Tsunami Advisory. The third highest level of tsunami alert. Advisories are issued by the TWCs to coastal populations within areas not currently in either warning or watch status when a tsunami warning has been issued for another region of the same ocean. An Advisory indicates that an area is either outside the current warning and watch regions or that the tsunami poses no danger to that area. The Center(s) issuing the Advisory will continue to monitor the event, issuing updates at least hourly. As conditions warrant, the Advisory will either be continued, upgraded to a watch or warning, or ended.

Tsunami Information Bulletin. A text product issued to inform that an earthquake has occurred and to advise regarding its potential to generate a tsunami. In most cases, a Tsunami Information Bulletin indicates there is no threat of a destructive tsunami affecting the issuing TWC's AOR, and are used to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas. A Tsunami Information Bulletin may, in appropriate situations, caution about the possibility of a destructive local tsunami. A supplemental Tsunami Information Bulletin may be issued if important additional information is received such as a sea level reading showing a tsunami signal. A Tsunami Information Bulletin may also be upgraded to a watch or warning if appropriate. Further, the Tsunami Information Bulletin may be used to recommend a warning when protocols agreed to by emergency management authorities within an AOR so specify.

Tsunami Information Statement. The same product as a Tsunami Information Bulletin.

Tsunami Warning. The highest level of tsunami alert. Warnings are issued by the TWCs due to the imminent threat of a tsunami from a large undersea earthquake or following confirmation that a potentially destructive tsunami is underway. They may initially be based only on seismic information as a means of providing the earliest possible alert. Warnings advise that appropriate

actions be taken in response to the tsunami threat. Such actions could include the evacuation of low-lying coastal areas and the movement of boats and ships out of harbors to deep water. Warnings are updated at least hourly or as conditions warrant to continue, expand, restrict, or end the warning.

Tsunami Warning System. The collection of resources, processes, and functions that ensure tsunami warnings are issued and disseminated. The system includes observational data (e.g. seismic, tide/sea-level), monitoring, communications and dissemination capabilities, products and services, and of course the human expertise at each point in the system. Warning systems may exist at local, national, international and global levels. A particular system has a governance body to oversee and ensure the proper working condition of the warning system.

Tsunami Watch. The second highest level of tsunami alert. Watches are issued by the TWCs based on seismic information without confirmation that a destructive tsunami is underway. It is issued as a means of providing an advance alert to areas that could be impacted by destructive tsunami waves. Watches are updated at least hourly to continue them, expand their coverage, upgrade them to a Warning, or end the alert. A Watch for a particular area may be included in the text of the message that disseminates a Warning for another area.

Warning Cancellation. A final text product indicating the end of the damaging tsunami threat. A cancellation is usually issued after an evaluation of sea level data confirms that a destructive tsunami will not impact the warned area.